

I (We) claim:

1. An exhaust gas purifying apparatus for an engine, comprising:
 - an addition apparatus that adds a reducing agent of NO_x to an exhaust gas from the engine;
 - a storage tank that stores the reducing agent of NO_x that is added to the exhaust gas by the addition apparatus or a precursor thereof in a state of an aqueous solution;
 - a concentration sensor that detects a concentration of the reducing agent or the precursor contained in the aqueous solution of the reducing agent or the precursor that is stored in the storage tank; and
 - a controller that generates an operation command to a predetermined object for being controlled related to purifying of the exhaust gas on the basis of the detected concentration which is the concentration of the reducing agent or the precursor detected by the concentration sensor, wherein
 - the controller determines whether or not the aqueous solution of the reducing agent or the precursor in the storage tank is in a stationary state and, at a stationary time when it is determined to be in a stationary state, permits sensing of the concentration by the concentration sensor, while at a shaking time other than the stationary time, prohibits the sensing of the concentration by the concentration sensor, and wherein
 - the concentration sensor detects the concentration of the reducing agent or the precursor only at the stationary time.
2. The exhaust gas purifying apparatus for the engine according to claim 1, wherein the controller determines whether or not a vehicle is

stopped, and measures a period of time that has elapsed after stoppage, and determines that the aqueous solution of the reducing agent or the precursor is in a stationary state when it is determined that the vehicle is stopped and the measured period of time that has elapsed is a predetermined period of time or longer than this.

3. The exhaust gas purifying apparatus for the engine according to claim 2, wherein the controller memorizes the detected concentration as a concentration memorization value, and renews the concentration memorization value with the detected concentration only when the detected concentration is within a predetermined range.

4. The exhaust gas purifying apparatus for the engine according to claim 2, wherein the controller memorizes the detected concentration as a concentration memorization value and, when the detected concentration is within a predetermined range, renews the concentration memorization value with the detected concentration, while when the detected concentration is out of the predetermined range, renews the concentration memorization value with the detected concentration on such a condition that, among a predetermined number of detected concentrations obtained up till now, those of a predetermined ratio of the predetermined number are out of the range.

5. The exhaust gas purifying apparatus of the engine according to claim 4, wherein the predetermined number of detected concentrations include detected concentrations obtained before the stoppage of the engine of the previous time.

6. The exhaust gas purifying apparatus for the engine according to

claim 4, wherein the controller generates a warning signal that informs a driver of an abnormality of the concentration of the reducing agent or the precursor in the case of renewing the concentration memorization value with the detected concentration that is out of the predetermined range.

7. The exhaust gas purifying apparatus for the engine according to claim 2, further comprising a deceleration sensor that detects a deceleration of the vehicle before the stoppage, wherein the controller renews the predetermined period of time in accordance with the deceleration of the vehicle that is detected by the deceleration sensor.

8. The exhaust gas purifying apparatus for the engine according to claim 7, wherein the controller prolongs the predetermined period of time according as the detected deceleration of the vehicle is larger.

9. The exhaust gas purifying apparatus for the engine according to claim 1, wherein the controller determines that the aqueous solution of the reducing agent or the precursor is in a stationary state at the time of the start of the engine.

10. The exhaust gas purifying apparatus of the engine according to claim 1, wherein the controller controls an amount of addition of the reducing agent by the addition apparatus on the basis of the detected concentration.

11. The exhaust gas purifying apparatus for the engine according to claim 1, wherein the concentration sensor comprises a sensor element section disposed in the storage tank and a circuit section connected to the sensor element section,

wherein the sensor element section is configured to include a

heater and a temperature-sensitive body having a property of changing an electrical characteristic value depending on a temperature, said temperature-sensitive body being directly or indirectly in contact with the aqueous solution of the reducing agent or the precursor in the storage tank, and being heated by this heater; and

wherein the circuit section drives the heater, detects the electrical characteristic value of the heated temperature-sensitive body, and detects the concentration of the reducing agent or the precursor on the basis of the detected electrical characteristic value.

12. The exhaust gas purifying apparatus for the engine according to claim 11, wherein the controller generates a determination signal indicating whether or not a predetermined amount or more of the aqueous solution of the reducing agent or the precursor is left in the storage tank on the basis of the electrical characteristic value detected by the circuit section.

13. The exhaust gas purifying apparatus for the engine according to claim 1, wherein the reducing agent of NOx is ammonia.

14. The exhaust gas purifying apparatus for the engine according to claim 13, wherein the storage tank stores urea water serving as the aqueous solution of the precursor.

15. An exhaust gas purifying apparatus for an engine, comprising:

addition means for adding a reducing agent of NOx to an exhaust gas of the engine;

storage means for storing the reducing agent of NOx that is added to the exhaust gas by the addition means or a precursor thereof in a

state of an aqueous solution;

concentration sensing means for sensing a concentration of the reducing agent or the precursor contained in the aqueous solution of the reducing agent or the precursor that is stored in the storage means;

command generating means for generating an operation command to a predetermined object for being controlled related to purifying of the exhaust gas on the basis of the detected concentration which is the concentration of the reducing agent or the precursor detected by the concentration sensing means;

state determining means for determining whether or not the aqueous solution of the reducing agent or the precursor is in a stationary state in the storage means; and

sensing permission means for permitting sensing of the concentration by the concentration sensing means at a stationary time when the aqueous solution of the reducing agent or the precursor is determined to be in the stationary state by the state determining means, while prohibiting the sensing of the concentration by the concentration sensing means at a shaking time other than the stationary time, wherein

the concentration sensing means detects the concentration of the reducing agent or the precursor only at the stationary time.

16. The exhaust gas purifying apparatus for the engine according to claim 15, wherein the command generating means generates an operation command for increasing or decreasing an amount of addition of the reducing agent to the addition means on the basis of the detected concentration.

17. A method for purifying exhaust gas containing therein NO_x by providing a storage tank that stores a reducing agent of NO_x or a precursor thereof in a state of an aqueous solution and supplying the aqueous solution of the reducing agent or the precursor stored in the storage tank to the exhaust gas from the engine, the method comprising:

arranging a concentration sensor that detects a concentration of the reducing agent or the precursor contained in the aqueous solution of the reducing agent or the precursor stored in the storage tank,

determining whether or not the aqueous solution of the reducing agent or the precursor is in a stationary state in the storage tank, and

operating a predetermined object for being controlled related to purifying of the exhaust gas on the basis of the detected concentration which is the concentration of the reducing agent or the precursor detected by the concentration sensor at the stationary time when it is determined to be in a stationary state, while prohibiting the operation of the object for being controlled according to the detected concentration at a shaking time other than the stationary time, and operating the object for being controlled on the basis of the detected concentration obtained at the stationary time before the shaking time.